3.8 3607

Olin CHEMICALS
P.O. BOX 248, LOWER RIVER ROAD, CHARLESTON, TN 37310
Phone: (615) 336-4000

December 14, 1992

VIA FEDERAL EXPRESS

Cheryl W. Smith
Senior Remedial Project Manager
United States Environmental Protection Agency
345 Courtland Street Northeast
Atlanta, Georgia 30365

Re: Response to EPA Comments Dated November 30, 1992
Environmental Evaluation Technical Memorandum
Olin Chemicals/McIntosh Plant Site
McIntosh, Alabama

Dear Ms. Smith:

Enclosed is Olin's response to EPA's comments on the Environmental Evaluation Technical Memorandum submitted to EPA on July 15, 1992. EPA's comments were transmitted to Olin in your letter of November 30, 1992. We look forward to your approval of this document, which forms the basis for the ecological portion of the Baseline Risk Assessment.

Please let me know if you have any questions regarding this submission or work in progress at McIntosh, Alabama.

Sincerely,

OLIN CORPORATION

J. C. Brown
Manager, Environmental Technology

\jcb\170
Enclosure

cc: W. A. Beal
D. E. Cooper (2)
W. J. Derocher (w/o att.)
M. L. Fries (w/o att.)
W. G. McGlasson (w/o att.)
J. L. McIntosh (w/o att.)
T. B. Odom
R. A. Pettigrew

Woodward-Clyde Consultants

3 8 1405

RESPONSES TO EPA COMMENTS ON THE ENVIRONMENTAL EVALUATION TECHNICAL MEMORANDUM OLIN CORPORATION MCINTOSH, ALABAMA

Comment No. 1 **According to the document, the major community types observed in OU-2 are semi-permanently flooded, permanently flooded and temporarily flooded bottomland. Wetlands are considered to be sensitive environments that have many functional values. The document lacks any pertinent discussion on the presence of these wetlands and the potential impacts to these areas as a result of site contamination. Provide a complete assessment of the wetlands in the Baseline Risk Assessment (BRA) and include, at a minimum, the following information: A) the important functions the wetlands serve in the OU-2 environment, B) the potential impacts to the environment as a result of site contaminants, and C) the measures to be taken to comply with federal and state regulations protecting wetlands in preparation for possible site remediation activities.**

Response:

We disagree that the document ". . . lacks any pertinent discussion on the presence of these wetlands and the potential impacts to these areas . . .." In fact, the OU-2 floodplain area is referred to as wetlands throughout the document. The wetlands are further categorized by the vegetative communities referred to in this comment. Potential impacts to the environment within OU-2, including the wetlands, and as a result of site contaminants are the subject of the EETM. The EETM included a detailed characterization of the vegetation based on 10 transects and 56 quantitative sampling locations. The characterization did not produce any evidence of vegetative stress from site contaminants.

Olin recognizes that the wetlands in OU-2 are a sensitive environment. Any remedy must be carefully evaluated to assure potential benefits outweigh damage caused by implementation. Olin agrees that an adequate assessment of the wetlands to meet CERCLA objectives is necessary. In the BRA, Olin will provide information about the important functions of OU-2 wetlands. In the FS, Olin will provide information on measures to be taken to comply with state and fedreal regualtions for protecting wetlands, including Executive Orders Related to Floodplains (11988) and Wetlands (11990) - EPA's August 6, 1985 Policy on Floodplains and Wetlands Assessments for CERCLA Actions.

Comment No. 2 **The document has not clearly characterized the likely or presumed exposure pathways (air, surface water, soil, sediments, vegetation). Provide a brief discussion on each exposure pathway to determine the potential of exposure to terrestrial and aquatic species, as well as to recognize potential exposure to humans. This includes transfer of contaminants through the food chain as well as the risk to all organisms that may utilize areas contaminated by site - related contaminants.**

Response:

As described on Page 10 of the EETM, the exposure pathways will be defined in the exposure assessment as part of the BRA. A site conceptual exposure model will be developed to define the complete and significant ecological exposure pathways at the site. Exposure concentrations will be developed based on concentrations detected in the media and the use of factors such as fate and transport of the chemicals of potential concern.

Comment No. 3 **The document presents ecological assessment data for OU-2 only. This document did not contain the results of the vegetative stress survey conducted in areas of OU-1 in November 1991. The impacts from potential contamination in OU-1 should be presented in the BRA as it relates to the ecological assessment portion of this document.**

Response:

3 8 1433

The BRA will include the results of the OU-1 vegetative stress survey.

Comment No. 4 **The document fails to outline the effect, if any, that basin contaminants place upon the adjacent Tombigbee River especially during those times of the year when the river and the basin are one contiguous body. Specifically, the document states that the absence of allochtonous coarse particulate organic matter in the basin may be due to annual flooding and flushing of the basin. If such is the case, then it seems reasonable that contaminated sediments as well would be flushed from the basin into the river. Contaminant transport from and to the basin as it relates to the Tombigbee River must be addressed in the BRA.**

Response:

Olin recognizes the need for hydrodynamics studies in the basin to assess potential remedial alternatives for the basin and to assess the potential for sediment transport from the basin. Olin will submit to EPA a plan and schedule for these hydrodynamic studies by January 15, 1992. The results of the studies will be reported to EPA in the baseline risk assessment or the feasibility study if these documents are submitted to EPA after the studies are completed. Otherwise the results will be reported under separate cover.

SPECIFIC COMMENTS

Comment No. 1 **<u>Executive Summary Page ES-2 Paragraph 3.</u> Provide language to address the issue of bioaccumulation of mercury (in the form of methyl mercury) in upper trophic level organisms.**

<u>Response:</u>

Section 4.4 of the EETM stated the intention to evaluate all pathways as a route(s) of exposure to higher vertebrates, including humans. This evaluation will be reported in the BRA. (See also the response to Specific Comment 19.)

Comment No. 2 **<u>Section 2.0. Page 12. Paragraph 1.</u> Provide the methodology used for reducing the original list of contaminants of concern. In your explanation, provide the frequency of detection, concentration and toxicity criteria used for limiting the list of contaminants of concern.**

In addition, the purpose and value of the screening method has not been clearly stated. Provide the rationale for using the screening method. In addition, the Sediment Screening Values and Federal Water Quality Criteria do not address the potential for bioaccumulation in the food chain for the population present in the basin. The BRA must provide information on bioaccumulation of site contaminants.

<u>Response:</u>

The methodology and rationale are described in Section 2.2. The text states that "As a starting point, all the TCL, TAL and TIC constituents that were detected in the sediment and surface water are considered as candidates for the list. To focus the assessment on the dominant ecological risk that may be present at the site, the list was reduced by eliminating the compounds that were believed to contribute a relatively insignificant risk based on the concentrations, frequency of occurrence and comparison

to ecological criteria and EPA guidelines." Table 2 provides the frequency of detection in the sediments for the organics constituents. Table 3 provides the frequency of detection for inorganics in the sediments, and Table 4 provides the frequency of detection for the inorganics in the surface water. Only two TCL analytes were detected in the surface water and these are discussed in the text.

In response to this comment the list will be reevaluated, taking into consideration the potential for bioaccumulation of the detected chemicals. An updated list will be provided in the BRA.

Comment No. 3 <u>Section 2.1.1, Page 15, Paragraph 2.</u> **The text omits mention of the elutriate mercury analysis performed on sediment samples. However, the analytical results from this method are provided in Appendix A. Provide a brief discussion on the purpose for this analysis and significant information on the results.**

The elutriate mercury tests consisted of mixing the sediments with surface water from the site and agitating the mixture. The water was separated from the aigitated mixture, and the water fraction was then analyzed for mercury. The results will be used to assess whether agitation causes mercury to partition from the sediments to the water. These tests were developed by the U.S. Army Corps of Engineers to simulate the dredging and disposal process, and the results will be used in the evaluation of remedial alternatives.

Comment No. 4 <u>Section 2.1.1, Page 16, Paragraph 1.</u> **The text should state whether the referenced reported common ranges for metals are regional in relation to the Olin site or are national ranges.**

Response:

These are national ranges. In the BRA, the TAL data will also be compared to background samples collected during the Phase III sampling activities from a similar system (Hatchetigbee Lake) approximately 45 miles upstream.

Comment No. 5 **Section 2.1.1. Page 16 Paragraph 2. According to Table 3, mercury should be included in the text as a constituent detected above the reported common range for metals.**

Response:

The referenced paragraph was meant to identify the inorganic constituents, in addition to mercury, that were reported above the common range. The BRA will indicate that mercury was reported above the common range.

Also, the text states that selenium was detected at a concentration above the common metals range; however, Table 3 lists the maximum detection limit for selenium because the analyte was not detected in the grab sample. Resolve this discrepancy.

Response:

Table 3 is correct. The text of the BRA will indicate that selenium was not detected in any of the sediment samples; however, the maximum detection limit exceeded the reported common range.

Comment No. 6 **Section 2.2. Page 17. Paragraph 1. The text states that certain chemical compounds were eliminated based on concentrations, frequency of occurrence, and comparison with ecological criteria and EPA guidelines. Provide a list of quantitative values upon which the elimination of chemicals was based.**

Response:

The quantitative values were provided in the EETM. Table 3 compares the sediment data to the Effects-Range Low (ER-L) values, Effects-Range median values (ER-M) values, and common ranges. Table 4 shows the comparison of the surface water data to the Water Quality Criteria. These comparisons are limited to the inorganic results because similar values are not established for most of the organic compounds that were detected. The chemicals of potential concern list for the organics was developed primarily based on frequency of occurrence and concentrations. The BRA will include tabulation of the available Water Quality Criteria and the Region IV Sediment Screening Values for the detected organic analytes.

Also, Section 2.0, Paragraph 1 states that the list of chemicals of potential concern was partially determined through a review of health toxicity factors. However, Section 2.2 does not discuss toxicity as a screening criterion. Reference is made to ecological criteria and guidelines (Region IV Sediment Screening Values and Federal Water Quality Criteria). Such criteria and guidelines are not commonly used as criteria for selection of chemicals of potential concern Therefore, provide a discussion on the use of toxicity criteria as a screening mechanism.

Response:

The reference to comparison to health toxicity factors refers to development of the chemicals of potential concern list for the human health risk assessment. EPA suggested in their comments to the hazardous substance indicator parameter technical memorandum that the initial list for the human health risk assessment be reevaluated based on ecological guidance. Olin responded that a separate chemicals of potential concern list would be developed for the ecological assessment, which is the list that is presented in the EETM. The BRA will clearly indicate that there are two lists of chemicals of potential concern, one for the human health assessment and one for the ecological assessment. The Region IV screening values and the Water Quality Criteria were used for developing the list because these values were established based on the

toxicity to biota and provide an indication of the relative toxicity of the detected analytes.

Comment No. 7 **Section 2.2. Page 18. Paragraph 2. The last sentence states that comparisons of chlorinated benzene concentrations between fish tissue and sediments can be made. The text should provide an explanation of how such comparisons were used in the document.**

Response:

The referenced sentence was in the context of developing the chemicals of potential concern list. Because the list is carried through the remainder of the ecological assessment, the chlorinated benzenes were retained so that comparisons could be made between fish and sediment data. These comparisons will be made in the BRA in the development of exposure concentrations for the fish.

Comment No. 8 **Section 3.1.1. Page 23, Top of Page. The text should read "basal area per acre," not "basal acre per acre."**

Response:

The sentence will be corrected in the BRA.

Comment No. 9 **Section 3.1.3. Page 26. Paragraph 4. The first sentence refers to the identification of invertebrate taxa to the "generic" level. The term generic level is not appropriate in this context and should be revised to "genus" level.**

Response:

We suggest that EPA reconsider this comment. The Council of Biological Editors Style Manual does not provide a rule or convention for the use of the term generic, but it does use the adjective in exactly the same context as it was used in the EETM. Three

dictionaries all indicate that the word generic is an adjective which, when used in a biological context, means "of or pertaining to a genus."

Comment No. 10 **Section 3.1.3, Page 27, Paragraph 1, Top of page. Provide a reference for outside experts used to identify voucher specimens.**

Response:

Dr. Ralph O. Brinkhurst
Aquatic Resources Center
Franklin, Tennessee

Dr. Jeff Garnier
Aquatic Resources Center
Franklin, Tennessee

Dr. David Cook
Department of Biology
Wayne State University
Detroit, Michigan

Comment No. 11 **Section 3.1.3, Page 28. Top of page. Provide a rationale or a reference for the selection of parameters that were compared with COMPTREE. Further, it is not apparent why the remaining compounds identified as chemicals of potential concern were not used in this comparison. Explain this omission.**

Response:

Based on the frequency of occurrence, the concentrations, and the potential toxicity to the biota, mercury and hexachlorobenzene were identified as the constituents to be used for quantifying potential impact on the benthic organisms. Mercury was detected at all but one of the 22 benthic macroinvertebrate stations, and therefore, the mercury data were appropriate for statistical comparisons with the benthic populations. Statistical analyses were not performed with the hexachlorobenzene data because of the high incidence of nondetects (13 out of the 22 benthic samples). Similarly, the data from the other chemicals of potential concern were not appropriate for statistical comparisons. These constituents will be evaluated in a more qualitative manner in the

toxicity assessment by investigating, through the literature, their potential toxicity at the concentrations detected in the basin sediments.

Comment No. 12 **Section 3.2.1. Page 36. Paragraph 3. The document does not state that Federal and State natural resources trustees were contacted for historical data, etc., concerning endangered and threatened species and their critical habitat. If these entities were contacted or if other resources were utilized, please provide this information in the BRA.**

Response:

Both the U.S. Fish and Wildlife Service (USFWS) and the Alabama Natural Heritage Program were contacted in an effort to obtain information regarding species considered threatened, endangered, or of special concern (TES species). The USFWS provided general information, but declined to divulge details regarding local distributions of TES plants and animals on the basis that a specific proposed action had not been identified. The state Heritage Program was contacted in early summer, 1992, at which time staff indicated that information could not be provided because updating of computer files was in progress. More recently, the state indicated that detailed information could not be provided because key personnel were not available. On the latter occasion, however, some general information was provided. The information presented in the EETM was derived from informal contacts with the agencies in question, local experts, and public documents. Olin is continuing its efforts to obtain details about TES species and their habitats, and will incorporate any further information obtained in the BRA.

Comment No. 13 **Section 3.2.1. Page 37. Paragraph 2. The text indicates the occurrence of dead cypress trees in the northern portion of OU-2 that were most likely killed by fire many years ago. However, the recent mortality of younger cypress trees also was noted during field observations. The text should include a possible explanation for the apparent recent death of the younger cypress trees.**

3 8 142

Response:

The area of the mortality in younger cyprus trees (a few individual trees in a very localized area) is in the northern part of OU-2, adjacent to Ciba Geigy property. This area is near Ciba Geigy's effluent pipeline and the mortality is likely due to construction activities.

Comment No. 14 **Section 3.2.1, Page 37, Paragraph 4. The text states that damage to vegetation in the northern portion of OU-2 was apparently caused by a previous fire. Review historical data, including aerial photographs, to determine the approximate time the fire occurred. Provide this information in the BRA.**

Response:

Olin has reviewed historical aerial photographs of the site and evidence of fire was not observed. This is understandable given the localized affected area that was identified in the field, and the rapid growth of vegetative cover in the area. It is not necessary to identify the date of the fire to complete the ecological assessment.

Comment No. 15 **Section 3.2.1, Page 38, Paragraph 1. In addition to mentioning the lack of emergent and submergent vegetation in the current wastewater ditch, include language on the lack of emergent vegetation in the shallow areas of the basin.**

Response:

The scarcity of emergent vegetation in the shallow, marginal portions of the basin was discussed in detail in Section 4.1, Page 51, Paragraph 3. It is not accurate to state, that littoral vegetation is absent from the basin. Rather, such vegetation is sparse and limited in distribution. Visual observations were made during a low-altitude flight along much of the lower Tombigbee and Mobile rivers in September. A summary of these observations will be provided in the BRA; all but one of dozens of similar lentic environments, both upstream and downstream of the basin, were characterized by scarce or no littoral vegetation. Hatchetigbee Lake, chosen as a reference site for benthic macroinvertebrate sampling, had about the same amount of littoral vegetation as the basin. The EETM (written prior to the overflight) had noted that it was unclear whether scarce littoral vegetation was a condition peculiar to the basin. It is now clear that the basin is fairly typical in this respect.

Comment No. 16 **Section 3.2.2, Page 40 Paragraph 3. The text should provide a definition for the term "species of special concern."**

Response:

Olin recognizes that the term "species of special concern" has different connotations and will ensure that future use (i.e., in the BRA, see response to Specific Comment 12) is accompanied by careful definition.

Comment No. 17 **Section 3.2.3, Page 41, Paragraph 2. The discussion on analysis of sediment particle size should include the purpose for the analysis and the potential information to be obtained with respect to sediment contamination.**

Response:

Macroinvertebrate populations can be influenced by the particle size of the substrate and it is standard practice to determine the particle size distribution when doing benthic studies. Given the relative consistency of the results among stations, the particle size

distribution data were not compared statistically with the benthic results. Rather, these comparisons were made in a qualitative sense.

Comment No. 18 **Section 4.2 Page 52, Paragraph 1. The text states that OU-2 terrestrial and amphibious vertebrate populations do not differ significantly from those populations of similar offsite areas in the vicinity. Provide the basis for this conclusion, either from available literature sources or through actual field observations. In addition, the BRA must address the impact that site contaminants may pose on these populations.**

Response:

The EETM stated rather clearly (in the sentence preceding that which prompted the comment) that direct measurements of terrestrial/amphibious vertebrate populations were neither intended in the Amended Work Plan nor performed. Contrary to the assertion of the comment, the EETM did not conclude that OU-2 populations were similar to others in the vicinity. Instead, it stated in qualified terms that no evidence was found to suggest significant dissimilarity, noting further that relevant observations (indeed measurements) of habitats in the context of vegetative cover indicated no salient differences. Olin continues to search for literature that may improve understanding of local vertebrate populations, and, to the extent that such references are available, will incorporate the relevant information into the BRA. The major reason for enlisting the services of Dr. David Nelson (of the University of South Alabama) was his recognized expertise in local terrestrial ecology. The EETM statement in question was based in part on opinions provided by Dr. Nelson.

Comment No. 19 **Section 4.4, Page 54, Paragraph 2. Although the document provides a discussion on the effects of mercury concentrations in fish, the document fails to present ecological toxicity levels used for assessing the potential impacts to fish-eating species. In addition, the stated lowest observed effects levels (LOEL) are presented for mercury only. The discussion should also include LOELs for all listed potential contaminants of concern.**

Response:

As noted at the beginning of the EETM paragraph which prompted the comment, Olin intends to address the issues raised by the comment in the BRA. The overall approach outlined early in the EETM (Section 1.3, Page 10) indicated that the more detailed aspects of toxicity assessment and risk characterization are to be addressed in the BRA. The discussion in EETM Section 4.4 was mainly intended to provide a preliminary evaluation of the significance of the observed body burdens of mercury to the fish *per se*. Olin agrees that, to the extent that they were actually measured in the fish tissues, the concentrations of other constituents of concern (e.g., DDT) should have been evaluated in the context of published lowest observed effects levels (LOELs). This omission will be corrected in the BRA, where all available relevant information will be incorporated into a more detailed toxicity assessment.

Condition factors only address the length and weight of affected populations. However, these numbers do not reflect the potential of site contaminants on reproductive rates of the affected organisms, etc. Provide information in the BRA that relates the affect of site contaminants on all aspects of the life cycles, etc. of exposed populations present in the basin.

Response:

The condition factor is a measure of the relative health of individual fish (and, by extrapolation, populations). The characterization planned for the BRA will consider all available information on acute and chronic effects, as well as potential sublethal effects (e.g., on reproduction), of site constituents of concern for which exposure pathways can be demonstrated. It is recognized, for example, that egg-shell thinning in birds may constitute a significant potential impact associated with exposures to certain of the chemicals of concern.

Comment No. 20 <u>**Section 5.0, Page 56, Paragraph 1.**</u> **Provide examples that support the statement in the second sentence -- "Most indications of stress or adverse impact...."**

Response: 3 8 142

Although not mentioned in the summary statement at issue, supportive examples were identified in the body of the EETM. The apparent effects of fire, logging, insect damage, hydraulic factors, and the salinity in the discharge ditch were addressed in connection with vegetative stress. Depth was shown to be the only conspicuous (i.e., statistically demonstrable) factor affecting benthic macroinvertebrate communities. Other more qualitative evaluations were made in the document regarding the observed health of the fish and terrestrial vertebrate populations.

The BRA must provide a proposal to address the potential ecological effects of the migration of contaminants through the facility boundary via water, sediments, and biota.

Response:

The need for additional investigation would be determined based on the results of the studies discussed outlined in the response to General Comment 4.